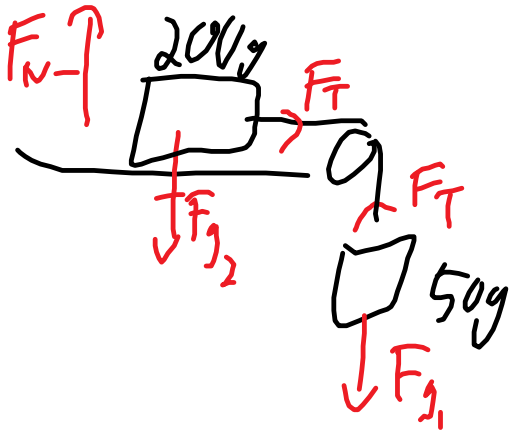
1. The 200g mass is now put on the table while the 50g mass hangs off the pulley. Answer a and b



$$F_{net} = ma = \Sigma F$$

$$F_{g_1} = m_T a$$

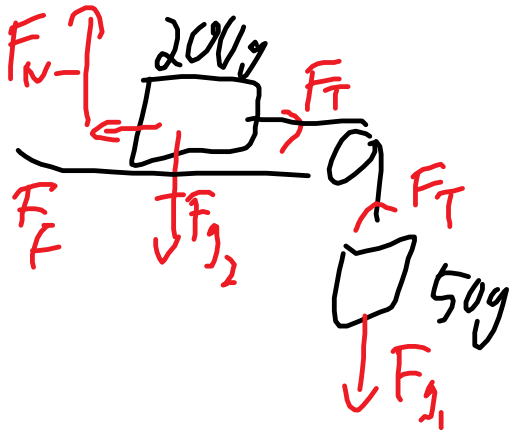
$$m_1 g = (m_1 + m_2) a$$

$$a = \frac{m_1}{m_1 + m_2} g = \frac{0.05\,kg \times 9.8}{0.05 + 0.2}$$

$$g = 2.0\,m/s^2$$

i) the table is fricitonless

ii) the 200g mass slides with coefficient of kinetic friction = 0.30



$$F_f = \mu F_N = \mu m g$$

$$= 0.3 \times 0.2 \times 9.8$$

$$= 0.59\,N$$

$$F_{net} = ma = \Sigma F$$

$$ma = F_{g_1} - F_f$$

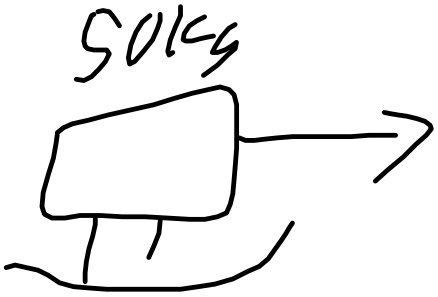
$$(m_1 + m_2) a = m_1 g - \mu m_2 g$$

$(0.05 + 0.2)\,a = 0.05 \times 9.8 - 0.59$

$a = -$

a = ((0.05x9.8)-(0.3x0.2x9.8))/(0.05+0.2)=-0.392 -0.392 m/s^2

p107
Q22



a) $W = F_g = mg$

$= 50\text{kg} \times 9.8\ \frac{N}{\text{kg}}$

$= \underline{490\ N}$

$\mu_s = 0.30$

$\mu_K = 0.10$

b) Started → Static

$F_f = \mu F_N = \mu mg$

$F_f = 0.30 \times 50 \times 9.8$

$= \boxed{150\ N}$

c) F_f → kinetic for sliding.

$= 0.1 \times 490 = \boxed{49\ N}$

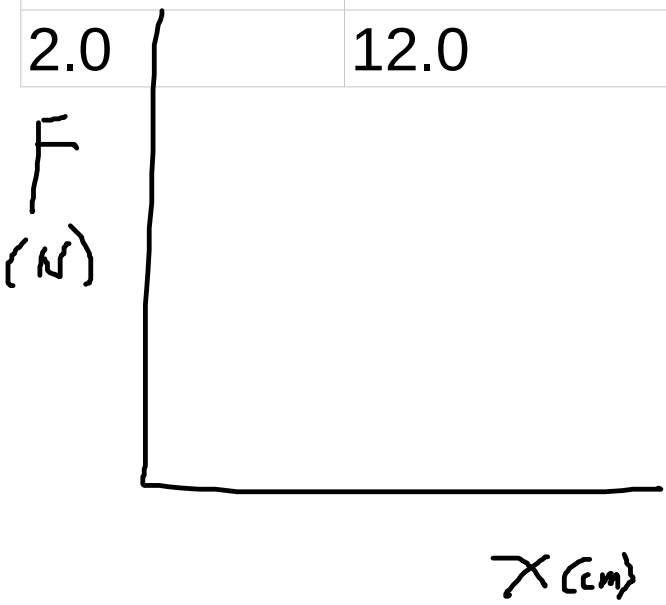
d) $ma = F_a - F_f$

$50kg(3.0m/s^2) = F_a - 49N$

$F_a = 2.0 \times 10^2 N$

Activity: Graph for homework F vs x

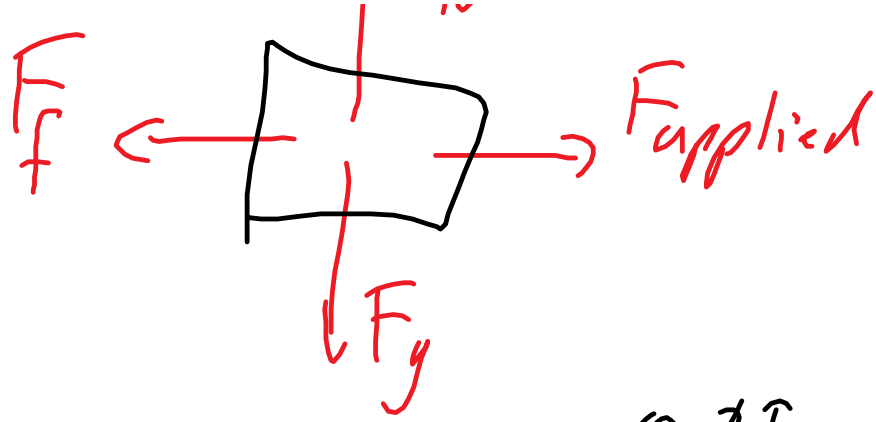
Force, F(N)	Length, L(cm)	Extension, x(cm
0	L_o = 6.0	0
1.0	9.0	3.0
2.0	12.0	6.0



get equation off graph

Quiz

a) 

a) 

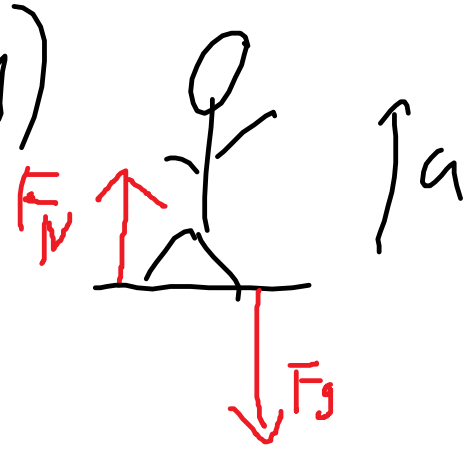
b) $W = F_g = mg = 0.45 \text{ or } 0.55 \times 9.8 \frac{N}{kg}$

c) $F_g = 1.5N$ thus $F_f = 1.5N$

$F_f = \mu F_N \quad \mu = \frac{1.5N}{\quad}$

d) $F_a = 3.0N$ but F_f stays $1.5N$

$F_{nt} = 3.0N - 1.5N = ma$

2 a) 

1.5/0.45=3.3333
or 1.5/0.55=2.7273

$ma = F_N - F_g$

$F_N = ma + mg$

b) if v is constant, a=0
so $F_N = F_g = mg$